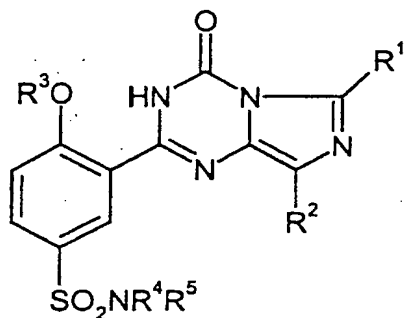


**Patent claims**

1. The use of cGMP-stimulating compounds for  
producing a pharmaceutical for the treatment  
5 and/or prophylaxis of diseases in which an  
improvement in and/or a cure of a syndrome can be  
achieved by improving the microcirculation of a  
tissue which contains a cGMP-metabolizing  
phosphodiesterase.  
10
2. The use as claimed in claim 1 for producing a  
pharmaceutical for the treatment and/or  
prophylaxis of coronary heart disease, cardiac  
insufficiency, pulmonary hypertension, bladder  
15 diseases, prostate hyperplasia, nitrate-induced  
tolerance or diseases of the eye, for the  
treatment and/or prophylaxis of central retinal or  
posterior ciliary arterial occlusion, central  
retinal venous occlusion, optical neuropathy and  
20 also macular degeneration and diabetes, and for  
the treatment of disturbances in the peristalsis  
of the stomach and esophagus, of female  
infertility, premature labor, preeclampsia,  
alopecia, psoriasis, the renal syndrome, cystic  
25 fibrosis and/or cancer.
3. The use as claimed in claim 1 for producing  
pharmaceuticals for improving perception,  
concentration performance and learning performance  
30 and/or memory performance, for improving  
perception, concentration performance, learning  
performance and/or memory performance following  
cognitive disturbances, age-associated learning  
and memory disturbances, age-associated memory  
35 loss, vascular dementia, craniocerebral trauma,  
stroke, dementia which occurs following strokes  
(post-stroke dementia), post-traumatic

craniocerebral trauma, general disturbances of concentration, concentration disturbances in children suffering from learning and memory problems, vascular dementia, dementia associated with Lewy bodies, dementia associated with degeneration of the frontal lobes including Pick's syndrome, Parkinson's disease, progressive nuclear palsy, dementia associated with corticobasal degeneration, amyolateral sclerosis (ALS), Huntington's disease, multiple sclerosis, thalamic degeneration, Creutzfeld-Jacob dementia, new variant Creutzfeld-Jacob dementia, HIV dementia, schizophrenia associated with dementia or Korsakoff's psychosis.

4. The use as claimed in at least one of claims 1 to 3, characterized in that at least one imidazo[1,3,5]triazinone of the general formula (I)



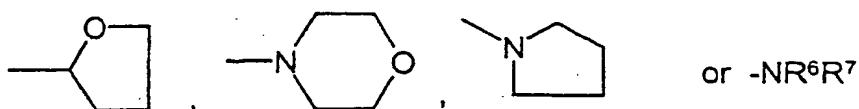
(I),

in which

- R¹ is straight-chain or branched alkyl having up to 4 carbon atoms,
- R² is straight-chain or branched alkyl having up to 4 carbon atoms or is (C₃-C₈)-cycloalkyl,

$R^3$  is hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms,

$R^4$  and  $R^5$  are identical or different and are hydrogen,  $(C_1-C_6)$ -alkoxy or hydroxyl or are  $(C_1-C_8)$ -alkyl which is optionally substituted, up to 3 times, identically or differently, by hydroxyl,  $(C_1-C_6)$ -alkoxy or radicals of the formulae



in which

15  $R^6$  and  $R^7$  are identical or different and are hydrogen or  $(C_1-C_6)$ -alkyl,

and/or, for its part,  $(C_1-C_8)$ -alkyl is optionally substituted by phenyl or phenoxy which, for their part, are optionally substituted, once to three times, identically or differently, by halogen, hydroxyl,  $(C_1-C_6)$ -alkoxy,  $(C_1-C_6)$ -alkyl or a radical of the formula  $-SO_2NR^8R^9$ ,

25 in which

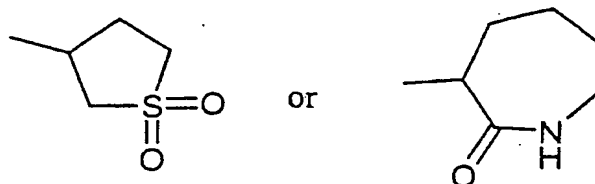
$R^8$  and  $R^9$  are identical or different and are hydrogen or  $(C_1-C_6)$ -alkyl,

30 or

$R^4$  is hydrogen or methyl

35 and

R<sup>5</sup> is radicals of the formulae

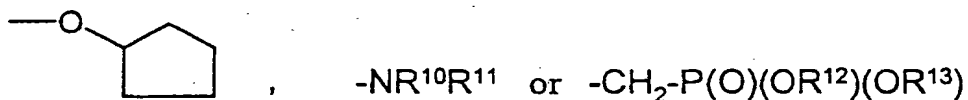


or

5

is phenyl which is optionally substituted, up to 3 times, identically or differently, by halogen, acetyl, (C<sub>1</sub>-C<sub>6</sub>)-alkoxy or radicals of the formulae

10



in which

15

R<sup>10</sup> and R<sup>11</sup> are identical or different and are hydrogen or (C<sub>1</sub>-C<sub>4</sub>)-alkyl,

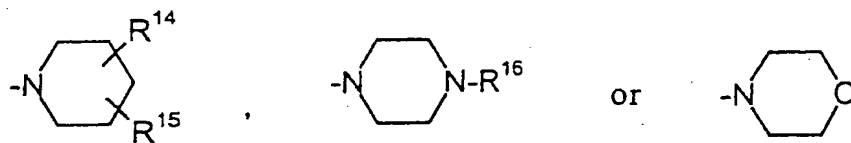
R<sup>12</sup> and R<sup>13</sup> are identical or different and are hydrogen or (C<sub>1</sub>-C<sub>6</sub>)-alkyl,

20

or

R<sup>4</sup> and R<sup>5</sup>, together with the nitrogen atom to which they are bonded, are radicals of the formulae

25



in which

30

R<sup>14</sup> and R<sup>15</sup> are identical or different and are hydroxyl, hydrogen or (C<sub>1</sub>-C<sub>4</sub>)-alkyl which is optionally substituted by hydroxyl,

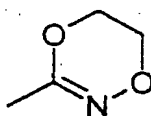
5 or

$R^{14}$  is hydrogen

and

10

$R^{15}$  is a radical of the formula



or

15

R<sup>14</sup> and R<sup>15</sup> together form a radical of the formula =N-O-CH<sub>3</sub>,

20

R<sup>16</sup> is hydrogen or (C<sub>1</sub>-C<sub>6</sub>)-alkyl which is optionally substituted by hydroxyl, or

is a 5- to 6-membered, aromatic heterocycle having up to 3 hetero atoms from the series, S, N and/or O,

. 25

and the salts, hydrates, hydrates of the salts, N-oxides and isomeric forms thereof is/are employed as (a) cGMP-stimulating compound(s).

30

5. The use as claimed in claim 4, characterized in that compounds of the general formula (I)

in which

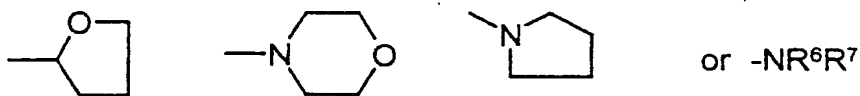
35

R<sup>1</sup> is methyl or ethyl,

$R^2$  is straight-chain or branched alkyl having up to 3 carbon atoms or is  $(C_3-C_6)$ -cycloalkyl,

5  $R^3$  is straight-chain or branched alkyl having up to 3 carbon atoms,

10  $R^4$  and  $R^5$  are identical or different and are hydrogen,  $(C_1-C_4)$ -alkoxy or hydroxyl or are  $(C_1-C_7)$ -alkyl which is optionally substituted, up to 3 times, identically or differently, by hydroxyl,  $(C_1-C_4)$ -alkoxy or radicals of the formulae



in which

$R^6$  and  $R^7$  are identical or different and are hydrogen or methyl,

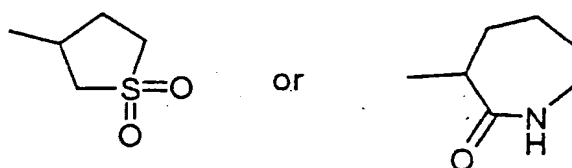
20 and/or, for its part,  $(C_1-C_7)$ -alkyl is optionally substituted by phenyl or phenoxy which, for their part, are optionally substituted, once to three times, identically or differently, by fluorine, chlorine, hydroxyl,  $(C_1-C_4)$ -alkoxy or  $(C_1-C_4)$ -alkyl or  
25 by a radical of the formula  $-SO_2NH_2$ ,  
or

30  $R^4$  is hydrogen or methyl,

and

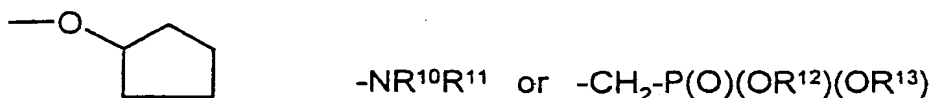
$R^5$  is radicals of the formulae

35



or

5 is phenyl which is optionally substituted, up to 3 times, identically or differently, by fluorine, chlorine, acetyl or (C<sub>1</sub>-C<sub>4</sub>)-alkoxy or by radicals of the formulae



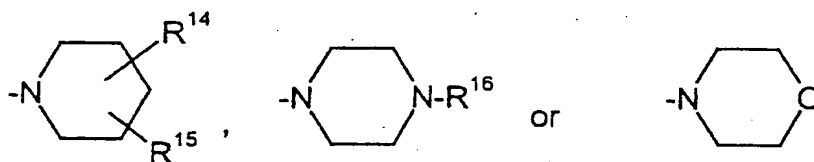
10 in which

R<sup>10</sup> and R<sup>11</sup> are identical or different and are hydrogen or methyl,

15 R<sup>12</sup> and R<sup>13</sup> are identical or different and are hydrogen or methyl,

or

20 R<sup>4</sup> and R<sup>5</sup>, together with the nitrogen atom to which they are bonded, are radicals of the formulae



in which

25

R<sup>14</sup> and R<sup>15</sup> are identical or different and are hydroxyl, hydrogen or (C<sub>1</sub>-C<sub>3</sub>)-alkyl which is optionally substituted by hydroxyl,

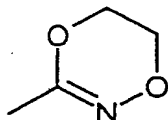
or

R<sup>14</sup> is hydrogen

and

5

R<sup>15</sup> is a radical of the formula



10

or

R<sup>14</sup> and R<sup>15</sup> together form a radical of the formula  
=N-O-CH<sub>3</sub>,

15

R<sup>16</sup> is hydrogen or (C<sub>1</sub>-C<sub>5</sub>)-alkyl which is optionally substituted by hydroxyl, or is pyridyl, pyrimidyl, furyl, pyrrolyl or thienyl,

20

and the salts, hydrates, hydrates of the salts, N-oxides and isomeric forms thereof are employed as cGMP-stimulating compounds.

25

6. The use as claimed in claim 4, characterized in that compounds of the general formula (I)

in which

30

R<sup>1</sup> is methyl or ethyl,

R<sup>2</sup> is n-propyl or cyclopentyl,

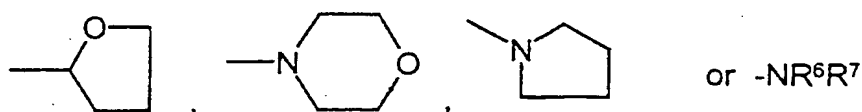
R<sup>3</sup> is methyl, ethyl or n-propyl,

35

R<sup>4</sup> and R<sup>5</sup> are identical or different and are hydrogen, (C<sub>1</sub>-C<sub>3</sub>)-alkoxy or hydroxyl or are

(C<sub>1</sub>-C<sub>6</sub>)-alkyl which is optionally substituted, up to 3 times, identically or differently, by hydroxyl or (C<sub>1</sub>-C<sub>3</sub>)-alkoxy or by radicals of the formulae

5



in which

10

R<sup>6</sup> and R<sup>7</sup> are identical or different and are hydrogen or methyl,

and/or, for its part, (C<sub>1</sub>-C<sub>6</sub>)-alkyl is optionally substituted by phenyl or phenoxy which, for their part, are optionally substituted, once to three times, identically or differently, by fluorine, hydroxyl or methoxy or by a radical of the formula -

20

SO<sub>2</sub>NH<sub>2</sub>,

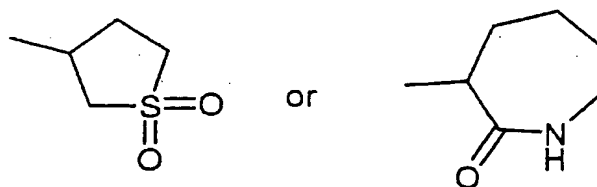
or

R<sup>4</sup> is hydrogen or methyl

25

and

R<sup>5</sup> is radicals of the formulae

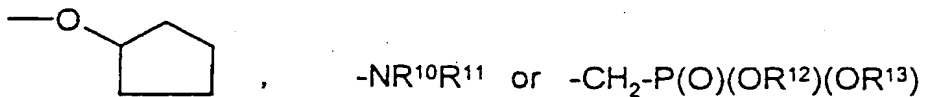


30

or

is phenyl which is optionally substituted, up to 3 times, identically or differently, by fluorine, acetyl or methoxy or by radicals of the formulae

5



in which

10

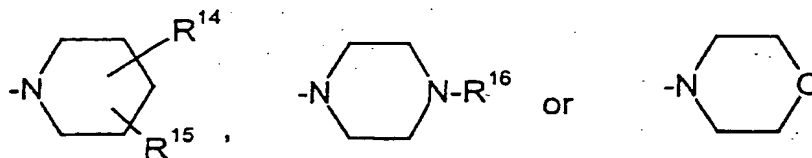
$R^{10}$  and  $R^{11}$  are identical or different and are hydrogen or methyl,

$R^{12}$  and  $R^{13}$  are methyl,

15

or

$R^4$  and  $R^5$ , together with the nitrogen atom to which they are bonded, are radicals of the formulae



20

in which

25

$R^{14}$  and  $R^{15}$  are identical or different and are hydroxyl or hydrogen or a radical of the formula  $-(CH_2)_2-OH$ ,

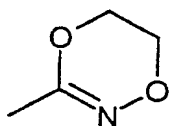
or

30

$R^{14}$  is hydrogen

and

R<sup>15</sup> is a radical of the formula



5 or

R<sup>14</sup> and R<sup>15</sup> together form a radical of the formula  
=N-O-CH<sub>3</sub>,

10 R<sup>16</sup> is hydrogen, pyrimidyl or a radical of the  
formula -(CH<sub>2</sub>)<sub>2</sub>-OH

and the salts, hydrates, hydrates of the salts, N-  
oxides and isomeric forms thereof are employed as  
15 cGMP-stimulating compounds.

7. A pharmaceutical for the treatment and/or  
prophylaxis of diseases in which an improvement in  
and/or a cure of a syndrome can be achieved by  
20 improving the microcirculation of a tissue which  
contains a cGMP-metabolizing phosphodiesterase,  
which pharmaceutical comprises at least one cGMP-  
stimulating compound.

25 8. A pharmaceutical for the treatment and/or  
prophylaxis of coronary heart disease, cardiac  
insufficiency, pulmonary hypertension, bladder  
diseases, prostate hyperplasia, nitrate-induced  
tolerance or diseases of the eye, for the  
30 treatment and/or prophylaxis of central retinal or  
posterior ciliary arterial occlusion, central  
retinal venous occlusion, optical neuropathy and  
of macular degeneration and diabetes, and for the  
treatment of disturbances of the peristalsis of  
35 the stomach and esophagus, of female infertility,

premature labor, preeclampsia, alopecia, psoriasis, the renal syndrome, cystic fibrosis and/or cancer, which pharmaceutical comprises at least one cGMP-stimulating compound.

5

9. A pharmaceutical for improving perception, concentration performance, learning performance and/or memory performance, for improving perception, concentration performance, learning performance and/or memory performance following cognitive disturbances, age-associated learning and memory disturbances, age-associated memory loss, vascular dementia, craniocerebral trauma, stroke, dementia which occurs after strokes (post-stroke dementia), post-traumatic craniocerebral trauma, general disturbances of concentration, concentration disturbances in children suffering from learning and memory problems, vascular dementia, dementia associated with Lewy bodies, dementia associated with degeneration of the frontal lobes including Pick's syndrome, Parkinson's disease, progressive nuclear palsy, dementia associated with corticobasal degeneration, amyotrophic lateral sclerosis (ALS), Huntington's disease, multiple sclerosis, thalamic degeneration, Creutzfeld-Jacob dementia, new variant Creutzfeld-Jacob dementia, HIV dementia, schizophrenia associated with dementia or Korsakoff's psychosis, which pharmaceutical comprises at least one cGMP-stimulating compound.
10. A pharmaceutical as claimed in one of claims 7 to 9 which comprises, as cGMP-stimulating compound, at least one compound as defined in claims 4 to 6.

30